

**Suffolk Community College
Grant Campus
Industrial Welding
Course Outline**

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Email:

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Course Purpose: This course covers the fundamentals of welding and cutting processes most often used in industry. This is a hands on class and classes are taught in a blended format- a combination of classroom, lab and online learning. The students will study and practice the principles of **Shielded metal arc welding (SMAW)**. After successful completion of all class testing, the student will receive a completion certificate in SMAW along with Welder qualification tests in accordance with AWS D1.1 from Suffolk Community College. Additionally students can test and qualify nationally through the American Welding Society at our facility at the completion of instruction. Qualifications available are 1" plate in 4G {overhead} and 3G {vertical} for unlimited thicknesses {acceptable for NYC} or 3/8" plate for limited thickness up to 3/4". The course will also introduce the student to **Gas tungsten arc welding (GTAW)**, also known as tungsten inert gas (TIG) and **Gas metal arc welding (GMAW)**, sometimes referred to as metal inert gas (MIG) welding. Safety and health awareness along with all essential employability skills needed for success in the welding industry will be taught.

Prerequisites: High School Diploma or GED

Course Outcomes: Upon completion of this course, students will be able to:

1. Discuss the hazards and safe practices associated with electric arc welding, oxyacetylene cutting, and the related tools and consumables.
2. Demonstrate the application of these safe practices during the course, and recognize how to safely cut and weld.
3. To be able to use and understand the standard and non-standard welding terms and definitions commonly used by welding professionals.
4. Setup and operate SMAW equipment,
5. Identify the parts and functions of SMAW equipment.
6. Describe SMAW principles.
7. Set up and operate oxyacetylene equipment.
8. Demonstrate cutting and beveling of steel.
9. Demonstrate proficiency in the use of the equipment and operating principles of Gas Metal Arc Welding, Gas Tungsten Arc Welding.
10. Demonstrate the selection of materials, procedures, and designs required for making successful welds in ferrous metals.

11. Describe joint design and weld joint geometry.
12. Demonstrate the mechanical and non-destructive methods of testing welded plates.
13. Demonstrate the use of welding detail drawings, mathematics, and measurement.
14. Demonstrate proficiency in all-positions of welding steel butts and fillets.
15. Explain base metal preparation techniques for cutting and welding.
16. Describe classification, selection, control, and storage of SMAW electrodes.
17. Describe weld inspection criteria in accordance with AWS D1.1 and other welding codes.

Required Text: Supplied

Attendance Policy: The College expects that each student will exercise personal responsibility with regard to class attendance. Students are expected to attend each class session and are responsible for all material covered. Students are expected to arrive to class on time and prepared for the day's session. The college defines excessive absence/lateness as more than the equivalent of one week of class meetings, which for this class is 12 hours during the semester. Excessive absence or lateness, whether excused or unexcused will result in possible failure. Students are responsible for work covered and due when not in class.

Two late arrivals or leaving class early will become one absence. Students must notify the instructor of an absence via e-mail or phone call.

Classroom Climate: Students are expected to be active participants in each class session.

It is expected that all students will:

- Practice personal academic integrity
- Respect the dignity of all persons
- Respect the rights and property of other's opinions
- Demonstrate concern for others, their feelings, and their needs for conditions which support their work and development

Classroom disruption will not be tolerated. No cell phones or iPods are to be used during class time. No food or drink in class.

Students are required to:

- Adhere to appropriate dress while in the lab environment.
- Each participant is responsible to complete the Tooling U assignments.
- Safety glasses and work boots must be worn in all areas of the shop when machines or tools are in use and as specified by the instructor.
- Obtain the instructors permission before operating any machinery.
- Do not use any tools or equipment without proper safety and use instruction.

SAFETY IS THE MOST IMPORTANT PART OF THIS CLASS-Anyone behaving in an unsafe manner can be asked to leave the lab. Safety is everyone's responsibility.

Assignments: As directed by Instructor per scheduled lesson plans and lab projects.

Course Grading Criteria: To successfully complete this course, the student must successfully complete all of the assignments, demonstrate the required skills in the lab or shop, and pass the knowledge tests.

Methods of Instruction: A combination of lectures, demonstrations and exercises are used to guide students to a series of competencies. Specific skills are gained and measured, by the completion of the exercises.

Grading Policy:

- Tooling U Tests = 20%
- Quizzes = 20%
- Practical exercises = 20% (plates)
- Graded exercises 15%
- Participation = 10%
- Attendance= 15%